

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

10/533149

RECEIVED

AUG 19 2004

PCT

WRITTEN OPINION

(PCT Rule 66)

To:  
DOUGLAS J. COLLINS  
EXXONMOBIL UPSTREAM RESEARCH COMPANY  
P.O. BOX 2189  
HOUSTON, TX 77252-2189

Date of Mailing  
(day/month/year) 10 AUG 2004

REPLY DUE

within 1 months/days from  
the above date of mailing

Applicant's or agent's file reference

2002.002

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US03/29945

23 September 2003 (23.09.2003)

19 December 2002 (19.12.2002)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): B01D 53/22,69/04 and US Cl.: 96/8,10; 210/321.8,321.89

Applicant

EXXONMOBIL UPSTREAM RESEARCH COMPANY

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2 (a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

**When?** See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority to grant an extension. See rule 66.2(d).~~

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.  
For an informal communication with the examiner, see Rule 66.6

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 23 January 2006 (23.01.2006).

Name and mailing address of the IPEA/US  
Mail Stop PCT, Attn: IPEA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Robert H. Spitzer

Telephone No. (571) 272-0987

*Dut*

**I. Basis of the opinion****1. With regard to the elements of the international application:\***

- ☒ the international application as originally filed
- ☒ the description:  
pages 1-11, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☒ the claims:  
pages 12-15, as originally filed  
pages NONE, as amended (together with any statement) under Article 19  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☒ the drawings:  
pages 1-3, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☐ the sequence listing part of the description:  
pages NONE, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**  
These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:**

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**4. ☒ The amendments have resulted in the cancellation of:**

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig NONE

**5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."

**WRITTEN OPINION**

International Application No.  
PCT/US03/29943

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. STATEMENT**

Novelty (N)	Claims <u>1-17</u>	<b>YES</b>
	Claims <u>NONE</u>	<b>NO</b>
Inventive Step (IS)	Claims <u>1-17</u>	<b>YES</b>
	Claims <u>NONE</u>	<b>NO</b>
Industrial Applicability (IA)	Claims <u>1-17</u>	<b>YES</b>
	Claims <u>NONE</u>	<b>NO</b>

**2. CITATIONS AND EXPLANATIONS**

Claims 1-17 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry for the membrane separation of a fluid stream.

Claims 1-17 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a membrane module for separating a multi-component fluid stream, wherein the module has a hollow shell filled with a plurality of separation assemblies that each comprise a plurality of elongated membrane elements, one end of the membrane elements of each separation assembly being attached to and hermetically sealed to an inlet manifold and the opposing end of the membrane elements being attached to and hermetically sealed to an outlet manifold, at least one of the manifolds being unrestrained, thereby permitting axial movement of each membrane element in response to temperature changes, with at least one manifold from each separation assembly being in fluid communication with a manifold from one other separation assembly.

**WRITTEN OPINION**

International Application No.

PCT/US03/29945

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

The drawings are objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or content thereof: there is no description of number 100 on Fig. 5.

The description is objected to as containing the following defect(s) under PCT Rule 66.2(a)(iii) in the form or contents thereof:

Para. [0004], line 16, "as" should be inserted after "such"; and,

Para. [0024], line 9, "manifold" should be "manifolds".

Claim 17 is objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or contents thereof: in line 24, "and" should be "an".

**WRITTEN OPINION**

International Application No.

PCT/US03/29945

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the questions whether the claims are fully supported by the description, are made:

Claims 1-17 are objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because these claims are indefinite for the following reason(s):

In line 8 of claim 1, there is no antecedent for "the multi-component gas";  
In line 18 of claim 17, there is no antecedent for "the multi-component gas"; and  
Claims 2-16 are indefinite because they depend from indefinite claim 1.

WRITTEN OPINION

International Application No.  
PCT/US03/2015

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

**TIME LIMIT:**

The time limit set for response to a Written Opinion may not be extended. 37 CFR 1.484(d). Any response received after the expiration of the time limit set in the Written Opinion will not be considered in preparing the International Preliminary Examination Report.